Research Product 88-14

Authoring Guide: A Job Aid to Design and Produce a Combat Leaders' Guide

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U. S. Army Research Institute for the Behavioral and Social Sciences

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EDGAR M. JOHNSON
Technical Director

WM. DARRYL HENDERSON
COL, IN
Commanding

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Stephen L. Goldberg
Patrick J. Valentine

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The modern combat leader must make many complex decisions under conditions of great stress. However, while the leader's job has increased in difficulty, there are no effective, standardized job performance aids available to help the combat leader accomplish his job.

This report is part of the Combat Leaders' Guide (CLG) project to produce a modular job performance aid system for combat leaders to use during periods of high stress in continuous combat.

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Robert B. Winn and Elisabeth B. Evensen
Litton Industries, Inc.

for

Contracting Officer's Representative
Seward Smith

ARI Field Unit at Fort Benning, Georgia
Seward Smith, Chief

Training Research Laboratory
Jack H. Hiller, Director

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel
Department of the Army

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Training and Simulation

FOREWORD

The modern combat leader is faced with many complex decisions that must be made under conditions of great stress. However, while the job has increased difficulty, no standardized, effective job aids are available to help him accomplish his combat mission. The overall purpose of this project was to design a job aid system, in modular or chapter form, to assist the leader's combat performance. This report provides units and organizations with the basic information to conduct a job aid analysis and then design their own unique job aids following the Combat Leaders' Guide (CLG) format requirements and guidelines.

This product was produced by Litton Computer Services under contract to the Army Research Institute's Fort Benning Field Unit. The research task that supports this mission is Advanced Methods and Systems for Fighting Vehicle Training, and the work was sponsored by TRADOC Training Technology Agency, Fort Monroe, Virginia.

The Combat Leaders' Guide: Rifle Platoon and Squad (ARI RP 87-23), a prototype manual, was distributed to selected military units and personnel for comment and review. A second product, the Combat Leaders' Guide: Platoon Leaders, Platoon Sergeants, and Squad Leaders (ARI RP 87-35), incorporated feedback from the original. The present product, reflecting the overwhelming support for the CLG, permits units and trainers to design CLGs to meet their own mission needs. Personnel throughout the Infantry School and Center have been briefed both formally and informally on the CLG, and information has been distributed to Army units in the United States and in Europe, to TRADOC schools, and to many National Guard units.

EDGAR M. JOHNSON
Technical Director

AUTHORING GUIDE: A JOB AID TO DESIGN AND PRODUCE A COMBAT LEADERS' GUIDE

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AUTHORING GUIDE:
A JOB AID TO DESIGN AND PRODUCE A COMBAT LEADERS' GUIDE

INTRODUCTION

The modern combat leader is faced with complex decisions which must be made under conditions of great stress. The sophistication of modern weapons and equipment, the envisioned fluid battlefield, the ability of forces to operate effectively around the clock, increased mobility, and changing doctrinal requirements have greatly increased the level of complexity of the battlefield. However, while the combat leader's job has increased in level of difficulty, no effective, standardized job aids are available to assist him in accomplishing his combat mission. Although job aids and handbooks have been developed in many forms and formats, these aids, whether singly or in combination, are not suitable for the modern leader to use in efficiently and effectively performing the tasks required of him. The material has little commonality of form, size, or level of specificity. There are areas of overlap and significant areas of omission among the job aids, pocket manuals and guides available.

With funding from the Training Technology Agency at TRADOC, personnel from the Army Research Institute at Fort Benning's contractor staff began development of the Combat Leaders' Guide (CLG) by a systematic analysis of the tasks and duties of rifle squad and platoon leaders in Light and Fighting Vehicle Infantry Battalions. From these was developed the initial Combat Leader's Guide: Rifle Platoon and Squad, followed later by the Combat Leader's Guide: Platoon Leaders, Platoon Sergeants, and Squad Leaders. Although the primary focus of the project was on producing a job aid system for the combat leader at platoon and squad level, a secondary focus was on development of an authoring guide to allow others to prepare additional CLGs tailored to their own unique missions, situation, equipment or organization.

The CLG contains tasks from the Soldiers Manual of Common Tasks and the appropriate MOS-specific Soldiers Manuals. Each task was analyzed to determine salient features for or against job aiding; the tasks were then rewritten and presented in standardized form. The type style and size chosen was sufficiently large to be readable in low-light conditions, by eyes suffering from fatigue. The text was informational, without giving more material than necessary for a trained and proficient leader to use as a memory jogger. The tasks were assembled in logical sequence, in checklist or work sheet format, and produced on waterproof paper within pocket sized hard covers, fastened with post screws for easy page changes. The modular format and size make a useful and usable product, for any combat, combat support, or combat service support leader. It is adaptable to any career military field or branch or service, and is equally usable by the Active Army, Army Reserve or National Guard.

The present product, Authoring Guide: A Job Aid to Produce a Combat Leaders' Guide, details the general process used in the development of the CLG, provides construction guidelines, and formats.

DEVELOPMENT OF A VALID MASTER TASK LIST

To develop a valid master task list, you must first produce an initial combined task List. The initial task list is the first grouping of all of the individual tasks for which the MOS code job incumbents are held responsible. These tasks consist of all the tasks in the relevant Soldier Training Publications, to include the Soldier's Manual of Common Tasks (SMCT) for the Skill Level (SL) to be addressed, and all skill levels below; and MOS-specific Soldier's Manual (SM) for the Skill Level to be addressed, and all skill levels below. The size of this list will depend on the number and skill levels of the MOSs under study. The valid master task list is the final version of this list, free of typographical errors, redundancies, skill level mismatches, and other errors. Follow this procedure, in order, to develop a Valid Master Task List.

1. Construct an initial list of every task in the SMCT and SM that was gathered. Include task number, title, SL number, and a code to document the source of each task.

2. Arrange the list of tasks by task number in ascending order. Edit each element of each task to correct typographical errors.

3. Inspect your list to identify tasks with the same number.

a. If there are any tasks with the same task number listed in both the SMCT and one or more MOS specific SMs at the same SL, delete the redundant task from the list by deleting the task(s) with the same SL that are from a MOS-specific SM.

b. If there are any tasks with the same task number listed in both the SMCT and one or more MOS-specific SM at different SL, delete the skill level mismatch tasks by deleting the task(s) with the higher skill level from the same task number group.

c. If there are any tasks with the same task number listed in more than one MOS-specific SM of the same MOS at different SL, delete proponent school/ agency error tasks by deleting the task(s) with the higher skill level numbers from the same task number grouping.

4. Rearrange the corrected list by task number in ascending numerical order. This list is your Valid Master Task List.

5. Cite and give rationale for tasks deleted from your list to assist in completion of DA Form 2028, Recommended Changes to Publications and Blank Forms, to be sent to proponent schools and agencies as errors are found.

HOW TO DECIDE IF YOU SHOULD JOB AID A TASK

A job aid, or job performance aid, provides information that guides or facilitates on the job performance. It is used in the actual work situation. The following procedure explains how you must treat each task on your Valid Master Task List to determine if it can be job aided. There are three options available for each task: use a job aid for the task, do not use a job aid, or use a job aid for some portions of the task. There are some general rules to use when deciding if a task should be job aided. Some tasks should not be job aided because there is little time available for performance (low delay tolerance) or a high rate of performance (frequency). Tasks which may be job aided have low frequency, many steps, many decision points, or high consequences of error.

To make a decision on job aiding, each task must be rated on job aid criterion scales. Each task should be rated according to each criterion. Only through this process can you assure yourself of the most objective assessment of each task. The following scales, adapted from TRADOC Pam 351-4(T) and Harless (1978) are a sample method to analyze tasks. If your commander gives you other scales, or additional criteria, include them, and develop a rating scale for each.

RATE EACH TASK ON EACH OF THE FOLLOWING SCALES:

CRITERIA	CODE	MEANING
Task Delay Tolerance/ Rate of Performance ("Delay")	1	Extremely Low - task can be put off for more than 1 hour.
	2	Low - task must be completed within 1 hour.
	3	Below Average - task must be completed within 30 minutes.
	4	Average - task must be completed within 5 minutes.
	5	Above Average - task must be completed within 1 minute.
	6	High - task must be completed within 30 seconds.
	7	Extremely High - task must begin instantly and be completed as fast as possible.
Physical Constraints ("Phys Const")	1	Insignificant - no problem in using job aid while performing task.
	2	Significant - some problem in using job aid while performing task.
	3	Extremely Significant - cannot use any type of job aid while performing task.
Frequency of Performance ("Freq")	1	Less often than once a month.
	2	Once a month.
	3	Two or three times a month.
	4	Once a week.
	5	Two or three times a week.
	6	Once a day.
	7	More often than once a day.

CRITERIA	CODE	MEANING
Consequences of Error ("Con of Error")	1	Extremely Low - no bad consequences if task performed wrong.
	2	Low.
	3	Below Average.
	4	Average.
	5	Above Average.
	6	High.
	7	Extremely High - wrong task performance may result in mission failure, death, injury or equipment damage.
Number of Steps in Task ("Nmbr")	1	Extremely Low - 2 steps.
	2	Low - 3 steps.
	3	Below Average - 4 or 5 steps.
	4	Average - 6 or 7 steps.
	5	Above Average - 8 or 9 steps.
	6	High - 10 or 11 steps.
	7	Extremely High - 12 steps or more.
Difficulty ("Diff")	1	Extremely Low - simple, very short sequence; no precise hand-eye coordination steps.
	2	Low - simple, short sequence; no precise hand-eye coordination steps.
	3	Below Average - longer sequence; 1 or 2 simple decisions/ discriminations/ hand-eye coordination steps
	4	Average - combination of longer sequences and simple decisions/ discriminations/ hand-eye coordination steps.
	5	Above Average - complex sequences/ decisions/ discriminations/ hand-eye coordination steps.
	6	High - difficult, complex decision making/ discriminations/ precise hand-eye coordination steps.
	7	Extremely High - very difficult, complex decision making/ discriminations/ precise hand-eye coordination steps.
Chance of Change ("Chg")	1	Method will change within 1 month.
	2	Method will change within 6 months.
	3	Method will change within 12 months.
	4	Method will change within 18 months.
	5	Method will change within 24 months.
	6	Method will not change within 24 months.
	7	Method will not change.

You may wish to use this Job Aid Data Summary Worksheet, adapted from Harless (1978), to assist in recording the rating for each task during your job aid analysis of the master task list.

JOB AID DATA SUMMARY WORKSHEET

Task	Delay	Phys Const	Freq	Con Of Error	Nmbr	Diff	Chng	Other

USING THE INFORMATION RECORDED ON THE JOB AID SUMMARY WORKSHEET, USE THE FOLLOWING PROCEDURE TO DECIDE IF YOU CAN OR CANNOT JOB AID A PARTICULAR TASK.

STEP ACTION

---

1 Task Delay Tolerance/ Rate of performance: Must the task be done without hesitation or very fast?

* If YES, and rating is 5 - 7, DO NOT DEVELOP a job aid for this task.
* If NO, and rating is 1 - 4, go to Step 2.

2 Physical Constraints: Would a job aid be difficult or impossible to use while doing the task?

* If YES, and rating is a 3, DO NOT DEVELOP a job aid for this task.
* If NO, and rating is 1 or 2, go to Step 3.

3 Frequency of performance: Will the task be done often enough to account for the cost of overlearning?

* If YES, and rating is 3 - 7, go to Step 4.
* If NO, and rating is 1 or 2, DEVELOP a job aid for this task.

4 Does the task have one or more of the following?

Consequences of Error: Will doing the task incorrectly result in mission failure, death, serious injury or equipment damage?

* If YES, and rating is 4 - 7, DEVELOP a job aid for this task.
* If NO, and rating is 1 - 3, DO NOT DEVELOP a job aid for this task.

Number of Steps: Does the task have many steps?

* If YES, and rating is 3 - 7, DEVELOP a job aid for this task.
* If NO, and rating is 1 or 2, DO NOT DEVELOP a job aid for this task.

Difficulty: Does the task have a number of difficult sequences, decisions, and/ or discriminations?

* If YES, and rating is 3 - 7, DEVELOP a job aid for this task.
* If NO, and rating is 1 or 2, DO NOT DEVELOP a job aid for this task.

Chance of Change: Is there a chance that the way the task is performed will change?

* If YES, and rating is 1 - 5, DEVELOP a job aid for this task.
* If NO, and rating is 6 or 7, DO NOT DEVELOP a job aid for this task.

You may wish to use a sheet like the following Job Aid Analysis Worksheet, adapted from Harless (1978), or a similar form to record the required information for each task during your job aid analysis of the valid master task list.

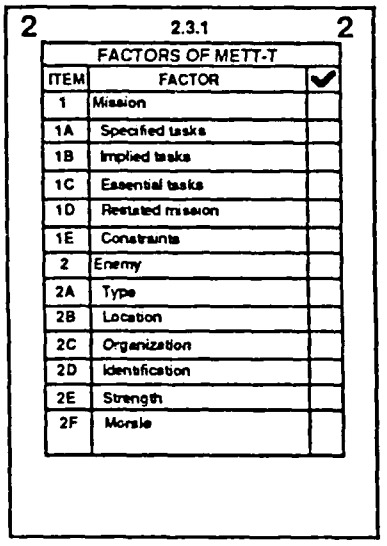
JOB AID ANALYSIS WORKSHEET

Task	Job Aid Factors		Decision		
	For	Against	Aid Only	Train Only	Aid + Train

JOB AID FORMATS

This section provides examples of the job aid formats used in the CLC. It describes and illustrates two basic types of job aid formats, the checklist format and the worksheet format. Use the checklist format when the task you are job aiding has a sequence of steps that should be performed in a certain order. Use the worksheet format when the task you are job aiding requires writing instructions, doing mathematical calculations, or listing data. Use a combination of the checklist and worksheet formats when the task that you are job aiding is both sequential and requires data to be entered or calculated. Flowcharts, decision tables, system-fault tables, etc., are also job aid formats that could be used to job aid a task. These were not used in the CLG. The task and the target audience must be your prime considerations when you choose a job aid format.

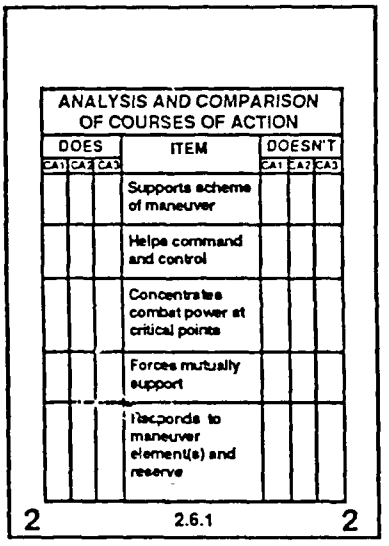
EXAMPLES OF CHECKLISTS:



2 2.3.1 2

FACTORS OF METT-T

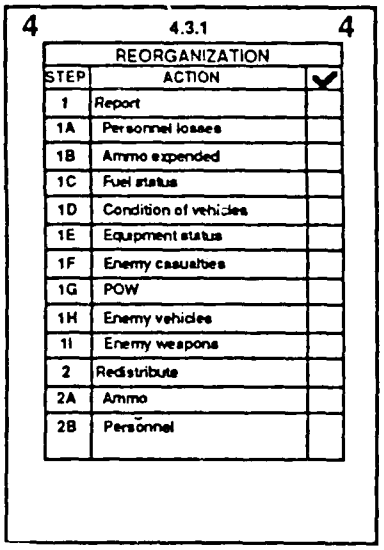
ITEM	FACTOR	✔
1	Mission	
1A	Specified tasks	
1B	Implied tasks	
1C	Essential tasks	
1D	Restated mission	
1E	Constraints	
2	Enemy	
2A	Type	
2B	Location	
2C	Organization	
2D	Identification	
2E	Strength	
2F	Morale	



ANALYSIS AND COMPARISON OF COURSES OF ACTION

DOES			ITEM	DOESN'T		
CA1	CA2	CA3		CA1	CA2	CA3
			Supports scheme of maneuver			
			Helps command and control			
			Concentrates combat power at critical points			
			Forces mutually support			
			Responds to maneuver element(s) and reserve			

2 2.6.1 2



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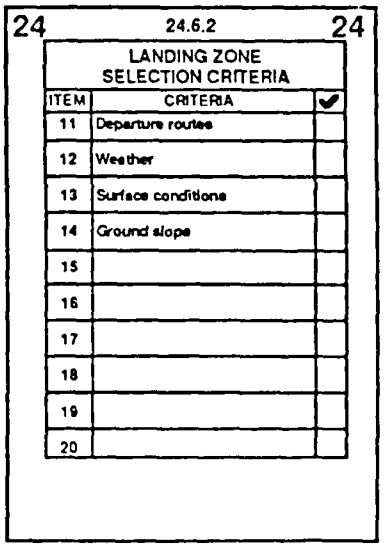
REORGANIZATION

STEP	ACTION	✔
1	Report	
1A	Personnel losses	
1B	Ammo expended	
1C	Fuel status	
1D	Condition of vehicles	
1E	Equipment status	
1F	Enemy casualties	
1G	POW	
1H	Enemy vehicles	
1I	Enemy weapons	
2	Redistribute	
2A	Ammo	
2B	Personnel	



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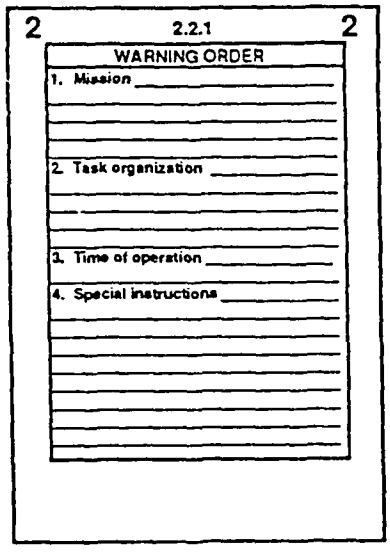
LANDING ZONE SELECTION CRITERIA

ITEM	CRITERIA	✔
11	Departure routes	
12	Weather	
13	Surface conditions	
14	Ground slope	
15		
16		
17		
18		
19		
20		

EXAMPLES OF WORKSHEETS:



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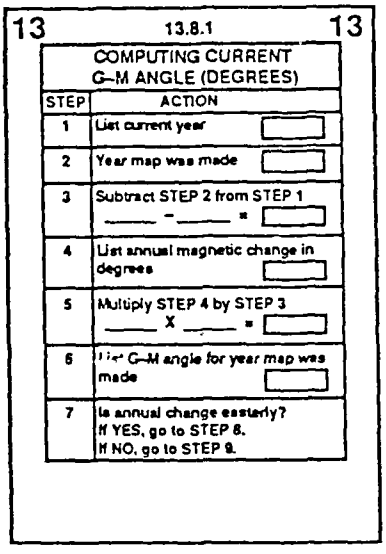
WARNING ORDER

1. Mission _____

2. Task organization _____

3. Time of operation _____

4. Special instructions _____



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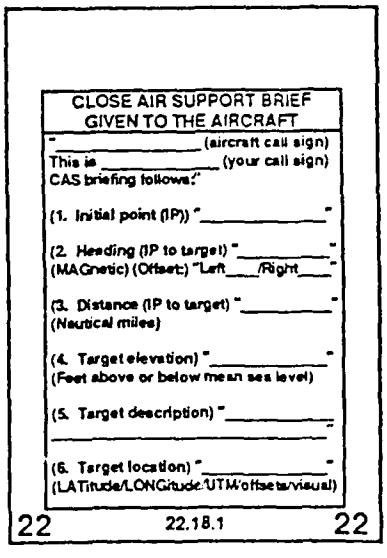
COMPUTING CURRENT G–M ANGLE (DEGREES)

STEP	ACTION
1	List current year ☐
2	Year map was made ☐
3	Subtract STEP 2 from STEP 1 _____ – _____ = ☐
4	List annual magnetic change in degrees ☐
5	Multiply STEP 4 by STEP 3 _____ X _____ = ☐
6	List G–M angle for year map was made ☐
7	Is annual change easterly? If YES, go to STEP 8. If NO, go to STEP 9.



CLOSE AIR SUPPORT BRIEF GIVEN TO THE AIRCRAFT

"_____ (aircraft call sign)
This is _____ (your call sign)
CAS briefing follows:"

(1. Initial point (IP)) "_____"

(2. Heading (IP to target) "_____"
(MAGnetic) (Offset:) "Left____/Right____"

(3. Distance (IP to target) "_____"
(Nautical miles)

(4. Target elevation) "_____"
(Feet above or below mean sea level)

(5. Target description) "_____"
_____

(6. Target location) "_____"
(LATitude/LONGitude/UTM/offsets/visual)

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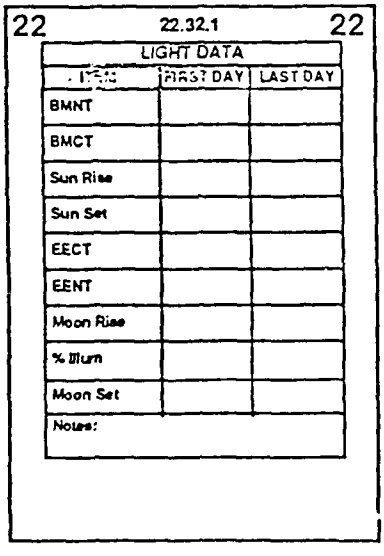

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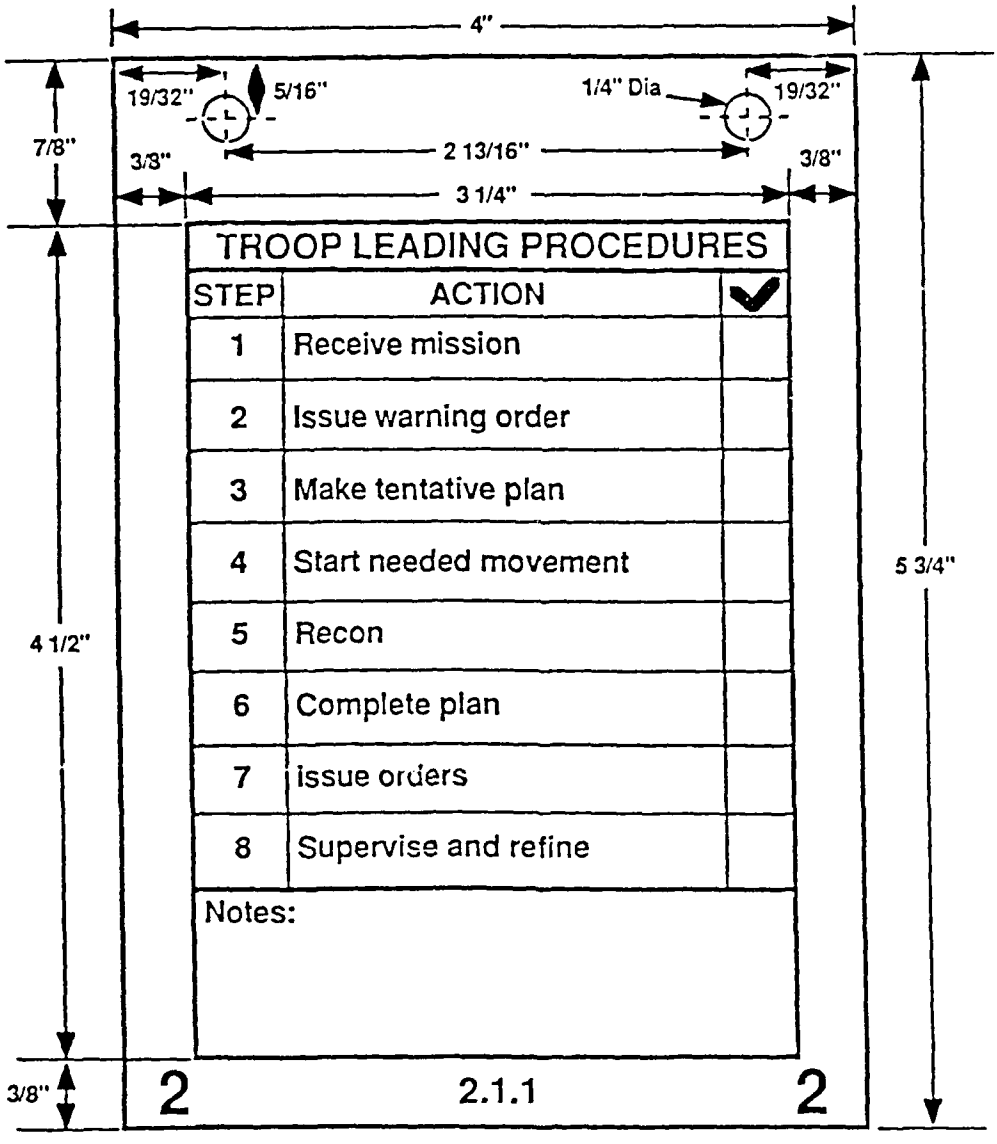
LIGHT DATA

ITEM	FIRST DAY	LAST DAY
BMNT		
BMCT		
Sun Rise		
Sun Set		
EECT		
EENT		
Moon Rise		
% Illum		
Moon Set		
Notes:		

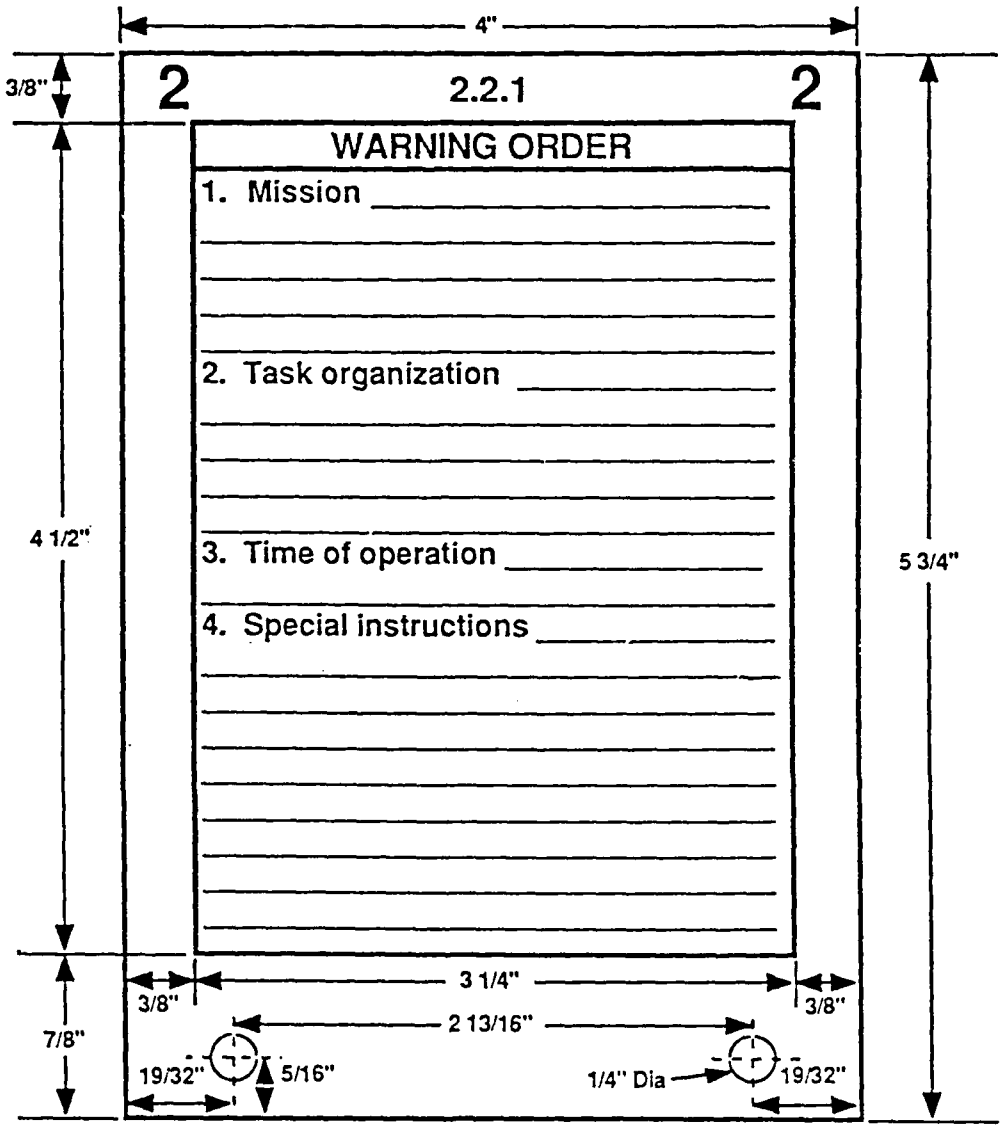
CONSTRUCTION GUIDELINES

The following guidelines state specific requirements for the construction of the pages that make up the CLG. Adherence to these guidelines insures standardization of the CLG page formats. These page formats are the result of an extensive user acceptance evaluation.

FRONT PAGE DIMENSIONS:



BACK PAGE DIMENSIONS:



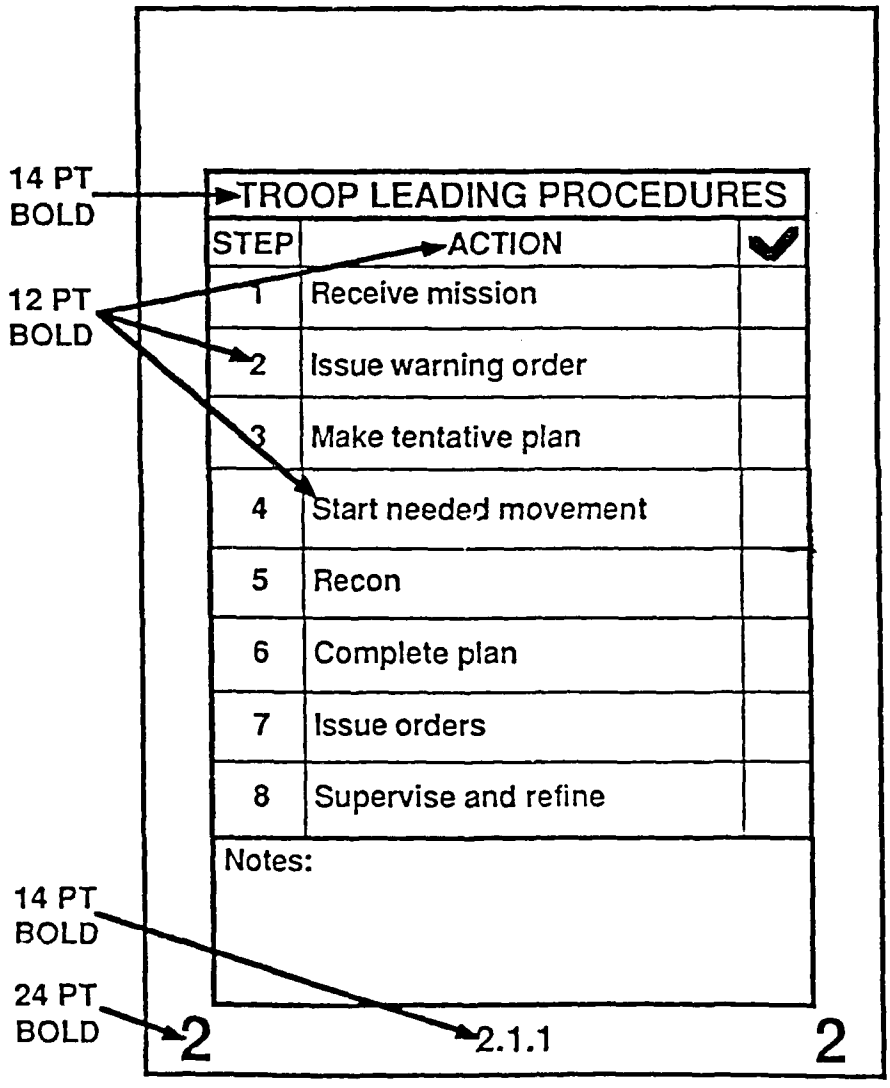
MODULE AND PAGE NUMBERING:

Each task (job aid) has three sets of numbers separated by periods. The first number is the module number. The second number is the task within that specific module. The third number is the page number within that specific task. Each page also has a large number placed in the lower left- and right-hand corners. These numbers give the module number for rapid access to a specific module.

For example, page 2.1.1 is from Module 2, Plan. It is Task 1, Troop Leading Procedures, and page number 1 of a one page task. Similarly, page 2.2.2 is page two of Task 2, Warning Order, in the same module.

TYPE STYLE AND TYPE SIZE:

The type style used throughout the CLG is Helvetica Medium Bold. This type style was specifically chosen for use under low-light and high stress conditions. The type size used throughout the CLG is at least as large as that used in Aircraft Operator's Manuals Emergency Procedure Pages (MIL-M-63029B(AV). The following is an example of the type sizes used in the CLG.



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GLOSSARY

The purpose of this section is to define certain terms and words that pertain to development of a Combat Leader's Guide. This background information will assist you in determining the content of one or a series of job aids.

TASK: A task is the lowest level of behavior in a job that describes the performance of a meaningful function in the job under consideration. Tasks formed in clusters make up duties. (TRADOC Pam 350-30, Aug 75)

DUTY: A duty is one of the major subdivisions of work performed by one individual. One or more duties constitute a job. (TRADOC Pam 350-30, Aug 75)

JOB: A job consists of the duties and tasks that a single worker performs. If several individuals perform identical duties and tasks, they all hold the same job. The job is the basic unit used to carry out the personnel actions of selection, training, classification, and assignment. (TRADOC Pam 350-30, Aug 75)

INDIVIDUAL TASK: An individual task is a unit of work activity that constitutes a logical and necessary step in the performance of a job or duty. A task is the smallest unit of behavior in a job that describes the performance of a meaningful function in the job under consideration. (TRADOC Reg 310-2, May 85)

COLLECTIVE TASK: A collective task is a unit of work that requires more than one individual for its completion. This can be a mission requirement which is further refined through subunits and broken down into individual tasks. It has an identifiable start and end point, and results in a measurable accomplishment or product. It has subtasks or elements which may be individual tasks in their own right. (TRADOC Pam 310-8, Sep 81)

LEADER TASK: A leader task is a task which is performed by a leader and which is necessary to initiate or control a collective task. A leader task generally involves planning, supervising, inspecting, reporting, managing, or similar actions. (TRADOC Reg 310-2, May 85)

CRITICAL TASKS: Critical tasks are those tasks which are essential for accomplishment of the unit mission, successful skill performance and/ or survival in combat, and which require training. (C&GSC DEV-091, Jan 86)

COMMON TASKS: Common tasks are those which contain the combat critical/ battlefield survival tasks which all soldiers must be able to perform regardless of their MOS. (C&GSC DEV-091, Jan 86)

SHARED TASKS: Shared tasks are those combat critical tasks performed by soldiers in more than one MOS, but which are not common to all MOS. (C&GSC DEV-091, Jan 86)

MOS-SPECIFIC TASKS: MOS-specific tasks are those combat critical tasks for each skill level and duty position of that MOS. (C&GSC DEV-091, Jan 86)

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